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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/487,401	01/19/2000	John R. Shedden	ST9-99-033	3119

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David N Koffsky Esq
Ohlandt Greeley Ruggiero & Perle
One Landmark Square Suite 903
Stamford, CT 06901

EXAMINER

FLEURANTIN, JEAN B

ART UNIT

PAPER NUMBER

2172

DATE MAILED: 08/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/487,401

Applicant(s)

SHEDDEN, JOHN R.

Examiner

Jean B Fleurantin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Response to Amendment

1. Claims 19-21 are added.

Claims 1-21 are remain pending for examination.

2. Applicant's arguments filed on 06/06/2002 with respect to claims 1-21 have been considered but they are not persuasive. Examiner discusses the new added claims 19-21 in the following rejection.

Response to Applicant' Remark

3. On page 4, Applicant stated that 'Yanai patent in full, neither describes nor suggest (a) determining a parameter indicative of demand for access to one of said copies of said log, or (b) assigning the process to another of said copies of the log if said parameter has reached a threshold value, as recited in claim 1.' However, Examiner disagrees because Yanai '5,742,792' includes the steps of the total number of copied tracks that were counted in step 477 is compared to a threshold, this threshold determines the number of tracks that must be copied while host processing is inhibited the greater the threshold, however the more quickly the active volume can be migrated, therefore the threshold should be set for about the longest tolerable duration of suspended host access to the data storage system, if step 479 finds that the total number of copied tracks that were counted in step 477 is greater than the threshold then execution branches back to step 475 to begin another iteration; which is readable as determining a parameter indicative of demand for access to one of said copies of said log, and the process to another of said copies of

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the log if said parameter has reached a threshold value (see cols. 35-36, lines 62-10). Also, Yanai '5,742,792' further teaches in column 37, lines 33 through 39, steps if the threshold is exceeded then execution loops back to the step to begin another iteration. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the teachings of Yanai and '5,742,792' with the step of determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a threshold value. This modification would allow the teachings of Yanai and '5,742,792' to improve the accuracy of the active log read I/O balancing for log duplexing, and provide monitoring repair and service or status access to the storage system(see col. 8, lines 18-20).

Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification.

Interpretation of Claims-Broadest Reasonable Interpretation

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

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Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanai et al. (US Patent No. 5,544,347) in view of Yanai et al. (US Patent No. 5,742,792) ("Yanai"), ("5,742,792").

As per claims 1, 7 and 13, Yanai substantially teaches a method for enabling improved access to data stored in a log of a computer memory system, said computer memory system having multiple copies of said log comprising a primary log and a secondary log (thus, at least one of the primary and secondary data storage system controllers coordinates the copying of primary data to the secondary data storage system and at least one of the primary and secondary data storage system controllers maintains at least a list of primary data which is to be copied to the secondary data storage device, which is readable as said computer system having multiple copies of said log comprising a primary log and secondary log) (see col. 2, lines 57-62), each log storing data transactions with a database system stored on said computer memory system as claimed, the method comprises the steps of responding to a process request for access to a log (thus, when a primary host computer requests writing of data to a primary data storage device or asynchronously with the primary host computer requesting the writing of data to the primary data

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storage system, in which case the remote data copying or mirroring is completely independent of and transparent to the host computer system; which is readable as responding to a process request for access to a log) (see col. 3, lines 5-10). But, Yanai does not explicitly indicate the step of determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a threshold value. However, '5,742,792' implicitly indicates the step of the total number of copied tracks that were counted in step 477 is compared to a threshold, this threshold determines the number of tracks that must be copied while host processing is inhibited the greater the threshold, however the more quickly the active volume can be migrated, therefore the threshold should be set for about the longest tolerable duration of suspended host access to the data storage system, if step 479 finds that the total number of copied tracks that were counted in step 477 is greater than the threshold then execution branches back to step 475 to begin another iteration; which is readable as determining a parameter indicative of demand for access to one of said copies of said log, and the process to another of said copies of the log if said parameter has reached a threshold value (see cols. 35-36, lines 62-10). Also, Yanai '5,742,792' further teaches in column 37, lines 33 through 39, the steps if the threshold is exceeded then execution loops back to the step to begin another iteration. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the teachings of Yanai and '5,742,792' with the step of determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a

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threshold value. This modification would allow the teachings of Yanai and '5,742,792' to improve the accuracy and the reliability of the active log read I/O balancing for log duplexing, and provide a method automatically maintaining a copy or mirror of data stored at a location geographically remote from the main or primary data storage device; and monitoring repair and service or status access to the storage system (see cols. 1 and 8, lines 24-27 and 18-20).

As per claims 2, 8 and 14, Yanai substantially teaches a method as claimed, wherein said one of said copies of the log is the primary log (thus, controls storing of primary data received from primary host computer on a primary data storage system, which is equivalent to said copies of the log is the primary log) (see col. 2, lines 39-41).

As per claims 3, 9 and 15, Yanai substantially teaches a method as claimed, wherein said parameter is a count of the processes assigned to the primary log (thus, controller maintaining the list of primary data to be copied updates this list to reflect that the given primary data has been received by and/or copied to the secondary data storage system the primary or secondary data storage system, which is readable as wherein said parameter is a count of the processes assigned to the primary log) (see col. 3, lines 21-24).

As per claims 4, 10 and 16, in addition to the discussion in claim 1 above, Yanai teaches the step of b) distributes new process assignments to both the primary log and secondary log in an attempt to balance work of the respective logs (thus, the primary and/or secondary data storage system controller maintaining the list of primary data to be copied updates this list to reflect that the given primary data has been received by and/or copied to the secondary data storage system

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the primary or secondary data storage system controllers and/or the primary and secondary data storage devices may also maintain additional lists in concluding which individual storage locations such as tracks on a disk drive are invalid on any given data storage device which data storage locations are pending a format operation which data storage device is ready to receive data, and whether or not any of the primary or secondary data storage devices are disabled for write operations; which is readable as distributes new process assignments to both the primary log and secondary log in an attempt to balance work of the respective logs) (see col. 3, lines 20-32).

As per claims 5, 11 and 17, in addition to the discussion in claim 1 above, Yanai further teaches the step of b) alternates new process assignments to the primary log and the secondary log in an attempt to balance work of the respective logs (thus, the primary and/or secondary data storage system controller maintaining the list of primary data to be copied updates this list to reflect that the given primary data has been received by and/or copied to the secondary data storage system the primary or secondary data storage system controllers and/or the primary and secondary data storage devices may also maintain additional lists in concluding which individual storage locations such as tracks on a disk drive are invalid on any given data storage device which data storage locations are pending a format operation which data storage device is ready to receive data, and whether or not any of the primary or secondary data storage devices are disabled for write operations; which is readable as alternates new process assignments to the

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primary log and the secondary log in an attempt to balance work of the respective logs) (see col. 3, lines 20-32).

As per claims 6, 12 and 18, Yanai substantially teaches a method as claimed, wherein said parameter is a count of requests that have been queued to the primary log (thus, without intervention from a host computer system, controls storing of primary data received from a primary host computer on a primary data storage system, and additionally controls the copying of the primary data to a secondary data storage system controller which forms part of a secondary data storage system for providing a back-up copy of the primary data on the secondary data storage system which is located in a geographically remote location from the primary data storage system; said parameter is a count of requests that have been queued to the primary log) (see col. 2, lines 39-47).

As per claims 19-21, Yanai substantially teaches a method as claimed, wherein said process request for access to said log comprises a request to read said log (thus, data may be transferred between the primary and secondary data storage system controllers synchronously, when a primary host computer requests writing of data to a primary data storage device or asynchronously with the primary host computer requesting the writing of data to the primary data storage system, in which case the remote data copying or mirroring is completely independent of and transparent to the host computer system; which is readable as wherein said process request for access to said log comprises a request to read said log) (see col. 3, lines 3-10).

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5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nilsen et al. US Patent Number 5,606,693 relates to the field of processing systems for maintaining databases. Hartung et al. US Patent Number 4,633,387 relates to the field taping data storage systems employing a backing store.

Conclusion

6. Any inquiry concerning this communication from examiner should be directed to Jean Bolte Fleurantin at (703) 308-6718. The examiner can normally be reached on Monday through Friday from 7:30 A.M. to 6:00 P.M.

If any attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Mrs. KIM VU can be reached at (703) 305-8449. The FAX phone numbers for the Group 2100 Customer Service Center are: ***After Final (703) 746-7238, Official (703) 746-7239, and Non-Official (703) 746-7240.*** NOTE: Documents transmitted by facsimile will be entered as official documents on the file wrapper unless clearly marked "***DRAFT***".

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2100 Customer Service Center receptionist whose telephone numbers are (703) 306-5631, (703) 306-5632, (703) 306-5633.



Jean Bolte Fleurantin

August 8, 2002

JBF/



KIM VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100